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EXAMINER	
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ART UNIT	PAPER NUMBER
2617	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/715,621	DURRANT ET AL.	
	Examiner	Art Unit	
	Michael Faragalla	2617	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *25 May 2007*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-26* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-26* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. This action is in response to the amendment that was filed on 05/25/2007. This action is made **FINAL.**

Claim Rejections - 35 USC § 112

2. The rejections under 112 first and second paragraphs have been withdrawn.

Response to arguments

3. The argued features, i.e., an apparatus comprising: a discriminator to detect unique signal tags in signal sent from a transmitter through at least one repeater, the unique signal tags generated by the repeater, to demodulate signal tags, and to generate repeater IDs from the signal tags, the repeater IDs identifying the at least one repeater through which the transmitter signals are sent; and a TOA (time of arrival) receiver to measure a propagation time delay for the signals from the transmitter received through the at least one repeater; the discriminator and TOA receiver being coupled to a location center (LC) to determine a position of the transmitter based on the TOA receiver measurements and the

repeater IDs read upon Sanderford, Jr. et al in view of Levinson et al as follows.

Sanderford teaches that the base repeaters collect signals from a transmitter (mobile device), redress the base repeaters ID numbers and then send the signals to the central monitoring station for calculation. Therefore, Sanderford et al teach the limitation of "a discriminator to detect unique signal tags in signals sent from a transmitter through at least one repeater, the unique signal tags generated by the repeater, to demodulate signal tags, and to generate repeater IDs from the signal tags, the repeater IDs identifying the at least one repeater through which the transmitter signals are sent". Sanderford et al show that the central monitoring computer calculates the position of the transmitter based on the time arrival information. Therefore, Sanderford et al teach the limitation of "a TOA (time of Arrival) to determine a propagation time delay for the signals from the transmitter received through the at least one repeater". Sanderford et al show the inherency of the presence of a discriminator because the central monitoring station is receiving multiple signals with multiple repeater IDs in order to be processed. Further, examiner reads the LC as the monitoring computer). Therefore, Sanderford et al teach the limitation of "The discriminator and TOA receiver being coupled to a location center (LC) to determine a position of the transmitter based on TOA receiver measurements and the repeater IDs".

However, Sanderford et al teach determining a propagation time delay but do not specifically show measuring a propagation time delay. Therefore, the examiner has used Levinson et al in order to show the measurement of the propagation time delay.

Both references used are in related art, and therefore can be combined and used in order to show obviousness with respect to prior art.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims**1-10, and 13-26** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Sanderford, Jr. et al (Patent number: 4,799,062)** in view of **Levinson et al (Patent number: 5,223,816).**

Consider **Claim 1,** Sanderford, Jr. et al clearly disclose an apparatus (read as central monitoring station) comprising:

(a) A discriminator to detect unique signal tags in signals sent from a transmitter (read as mobile device) through at least one repeater, the unique signal tags generated by the repeater, to demodulate signal tags, the repeater IDs identifying the at least one repeater through which the transmitter signals are sent; and to generate repeater IDs from the signal tags (abstract; figure 2; column 11, lines 20-35); (the base repeaters collect signals from a transmitter redress the base repeaters ID numbers, and send the signals to the central monitoring station for calculation).

(b) A TOA (time of arrival) receiver to determine a propagation time delay for the signals from the transmitter received through the at least one repeater (column 11, lines 29-42); (the central monitoring computer calculates the position of the transmitter based on the time of arrival information).

(c) The discriminator and TOA receiver being coupled to a location center (LC) to determine a position of the transmitter based on the TOA receiver measurements and the repeater IDs (column 11; lines 30-40); (the discriminator is inherently taught in the reference because the central monitoring station is receiving multiple signals with multiple repeater IDs in order to process them. Furthermore, the LC is read to be central monitoring computer).

However, Sanderford, Jr. et al teach a TOA receiver for determining a propagation delay for the signals from the transmitter, but do not specifically teach a TOA receiver to measure a propagation delay for the signals from the transmitter.

In related art, Levinson et al teach a TOA receiver to measure a propagation delay for the signals from the transmitter (figure 6; column 4, lines 60-67; column 5, lines 1-12).

Therefore, it would have been obvious to a person skilled in the art at the time the invention was made to incorporate the teaching of Levinson et al into the teaching of Sanderford, Jr. et al in order to determine accurate position of a mobile device (Levinson et al, column 1, lines 30-35).

Consider **Claim 4,** Sanderford, Jr. et al clearly disclose a system comprising:

(a) A receiver to receive a tagged signal generated by a signal repeater, the original signal being sent from a transmitter (mobile device) and to determine a time of arrival (TOA) of the received signal (abstract; figure 2; column 11, lines 20-35); (the base repeaters collect signals from a transmitter redress the base repeaters ID numbers, and send the signals to the central monitoring station for calculation).

(b) A corresponding location management unit coupled to the base station to demodulate the tagged signal, and generate a repeater ID signal therefrom (column 11, lines 25-32); (the central monitoring station collects signals coming from multiple repeaters and sent to a central monitoring computer in order to derive the position of the mobile device).

(c) A location center (read as central monitoring computer) coupled to the location management unit to determine the position of the transmitter based on the TOA receiver measurements and the repeater ID (column 11, lines 30-40).

However, Sanderford, Jr. et al shows receiving a tagged signal generated by a signal repeater, but does not specifically show that the signal is electronically tagged.

In related art, Levinson et al show that the signal is electronically tagged (column 3, lines 55-67).

Therefore, it would have been obvious to a person skilled in the art at the time the invention was made to incorporate the teaching of Levinson et al into the teaching of Sanderford, Jr. et al in order to compare by means of a microprocessor the time each relay received the portable transmitter's signal (Levinson et al, column 2, lines 43-48).

Consider **Claim 7,** Sanderford, Jr. et al clearly disclose a location measurement unit (LMU) comprising:

(a) A time of arrival (TOA) receiver to receive signals from a mobile unit through a repeater and to determine a propagation time delay between the mobile unit and the LMU through the repeater (column 1,20-25; figure 2; abstract).

(b) A discriminator to detect signal tags in the received signals, the tags identifying the repeater through which the signal was received, the signal tags identifying the repeater using repeater IDs (abstract; figure 2; column 11, lines 20-35); (the base repeaters collect signals from a transmitter redress the base repeaters ID numbers, and send the signals to the central monitoring station for calculation).

(c) A database having geographical coordinates of identified repeaters (column 1, lines 1-10; column 2, lines 50-55).

(d) A mobile location center (MLC) to determine a position of the mobile unit from the TOA receiver measurements, and the repeater IDs using the database (column 11, lines 20-35); (when the central monitoring station collects received signals, it forwards them to the central monitoring computer in order to derive the position of the mobile device).

However, Sanderford, Jr. et al discloses a time of arrival (TOA) receiver to receive signals from a mobile unit, but do not specifically show that the TOA receiver measures a propagation delay between the mobile unit and the LMU.

In related art, Levinson et al show that the TOA receiver measures a propagation delay between the mobile unit and the LMU (figure 6; column 4, lines 60-67; column 5, lines 1-10).

Therefore, it would have been obvious to a person skilled in the art at the time the invention was made to incorporate the teaching of Levinson et al into the teaching of Sanderford, Jr. et al in order to determine the location of a portable transmitter (Levinson et al, column 1, lines 54-58).

Consider **Claim 13,** Sanderford, Jr. et al clearly disclose a cellular telephony base station comprising:

(a) A diplexed antenna; a time of arrival (TOA) receiver coupled to the antenna to receive signals from a cellular telephone through at least one repeater and to measure a propagation time delay between the telephone and base station

(column 11, lines 29-42); (the central monitoring computer calculates the position of the transmitter based on the time of arrival information).

(b) A frequency discriminator to detect signal tags in the received signals, the tags identifying a repeater through which the signals are received (column 11; lines 30-40); (the discriminator is inherently taught in the reference because the central monitoring station is receiving multiple signals with multiple repeater IDs in order to process them. Furthermore, the LC is read to be central monitoring computer).

(c) A mobile location center (MLC) to determine a position of the cellular telephone from the TOA receiver measurements, and the repeater IDs (column 11, lines 20-35); (when the central monitoring station collects received signals, it forwards them to the central monitoring computer in order to derive the position of the mobile device).

However, Sanderford, Jr. et al discloses a time of arrival (TOA) receiver to receive signals from a mobile unit, but do not specifically show that the TOA receiver measures a propagation delay between the telephone and the base station.

In related art, Levinson et al show that the TOA receiver measures a propagation delay between the telephone and the base station (figure 6; column 4, lines 60-67; column 5, lines 1-10).

Therefore, it would have been obvious to a person skilled in the art at the time the invention was made to incorporate the teaching of Levinson et al into the

teaching of Sanderford, Jr. et al in order to determine the location of a portable transmitter (Levinson et al, column 1, lines 54-58).

Consider **Claim 16,** Sanderford, Jr. et al clearly disclose a method comprising:
(a) Receiving signals from a mobile unit through at least one repeater (abstract; figure 2; column 11, lines 20-35).
(b) Measuring the propagation time delay of the received signals (column 11, lines 20-30).
(c) Detecting tags in the received signals to generate a repeater ID for each signal including a tag, the tags identifying the repeater through which the signal was received (abstract; figure 2; column 11, lines 20-35); (the base repeaters collect signals from a transmitter redress the base repeaters ID numbers, and send the signals to the central monitoring station for calculation).
(d) Determining a position of the mobile unit from the TOA receiver measurements, and repeater IDs (column 11, lines 30-40).
However, Sanderford, Jr. et al show detecting tags in the received signals including a tag, but do not specifically show detecting tags in the received signals containing a tag.
In related art, Levinson et al show detecting tags in the received signals containing a tag (figure 6; column 4, lines 60-67; column 5, lines 1-10).
Therefore, it would have been obvious to a person skilled in the art at the time the invention was made to incorporate the teaching of Levinson et al into the

teaching of Sanderford, Jr. et al in order to determine exact location of a relay (column 3, lines 65-67).

Consider **Claims 2 and 5,** the combination of Sanderford, Jr. et al and Levinson et al shows the apparatus of claim 1, as well as the system of claim 4, wherein the transmitter comprises a mobile unit, and the location center comprises a mobile location center (MLC).

Consider **Claims 3 and 6,** Sanderford, Jr. et al as modified by Levinson et al show the apparatus of claim 2, as well as the system of claim 5, wherein the MLC determines the position of the transmitter based on the TOA receiver measurements and the repeater IDs by looking up the TOA receiver measurements and the repeater IDs in a database that includes geographical coordinates of the repeaters corresponding to the repeater IDs and a number of corresponding base stations (abstract; figure 2, column 1, lines 1-25; column 11, lines 20-30).

Consider **Claims 8 and 24,** Sanderford, Jr. et al as modified by Levinson et al show the unit of claim 7, as well as the method of claim 16, wherein determining a position comprises converting the propagation time delay measurements to distance measurements (column 11, lines 35-45).

Consider **Claim 10,** the combination of Sanderford, Jr. et al and Levinson et al shows the unit of claim 7, further comprising a diplexed antenna coupled to the TOA receiver.

Consider **Claim 15,** Sanderford, Jr. et al as modified by Levinson et al show the base station of claim 13, further comprising a database having geographical coordinates of identified repeaters, and wherein the MLC determines the position using the database (column 11, lines 20-30; abstract; column 2, lines 50-55).

Consider **Claim 17,** Sanderford, Jr. et al as modified by Levinson et al show the method of claim 16, wherein receiving signals comprises receiving signals at a time of arrival (TOA) receiver of a location measurement unit (column 11, lines 20-25).

Consider **Claim 18,** the combination of Sanderford, Jr. et al as and Levinson et al shows the method of claim 17, wherein measuring the propagation time delay comprises measuring the propagation time delay between the mobile unit and the TOA receiver.

Consider **Claim 19,** Sanderford, Jr. et al as modified by Levinson et al show the method of claim 16, wherein detecting tags comprises detecting tags at a frequency discriminator of the location measurement unit (column 11, lines 20-25).

Consider **Claim 20,** the combination of Sanderford, Jr. et al as and Levinson et al shows the method of claim 16, wherein detecting tags comprises detecting a frequency shift by comparing a frequency of a received signal to a frequency of a second signal from the same repeater.

Consider **Claim 21,** Sanderford, Jr. et al as modified by Levinson et al show the method of claim 20, wherein the second signal comprises a synchronization channel signal (column 3, lines 35-45).

Consider **Claim 22,** Sanderford, Jr. et al as modified by Levinson et al show the method of claim 16, wherein the tags comprise modulation signature applied to the received signal by the identified repeater (column 3, lines 5-21).

Consider **Claim 25,** Sanderford, Jr. et al as modified by Levinson et al show the method of claim 16, wherein determining a position comprises applying the repeater IDs to a database including geographical coordinates of repeaters (abstract; figure 2, column 1, lines 1-25; column 11, lines 20-30).

Consider **Claim 26,** the combination of Sanderford, Jr. et al as and Levinson et al shows the method of claim 16, wherein determining a position comprises determining a position on an arctangent basis.

Consider **Claims 9,14, and 23,** Sanderford, Jr. et al as modified by Levinson et al show the unit of claim 7, as well as the base station of claim 13, as well as the method of claim 22, wherein the signal tags comprise frequency shift keying (FSK) modulation (column 1, lines 15-25).

5. Claim **11** rejected under 35 U.S.C. 103(a) as being unpatentable over **Sanderford, Jr. et al (Patent number: 4,799,062)** in view of **Levinson et al (Patent number: 5,223,816)** and further in view of **Yun (Patent number: 5,945,9490).**

Consider **Claim 11,** Sanderford, Jr. et al as modified by Levinson et al show the unit of claim 7, but fail to specifically show that the unit further comprising a filter/diplexer coupled to the diplexed antenna.
However, in related art, Yun shows that the unit further comprising a filter/diplexer coupled to the diplexed antenna (figure 6).
Therefore, it would have been obvious to a person skilled in the art at the time the invention was made to incorporate the teaching of Yun into the teaching of Sanderford, Jr. et al as modified by Levinson et al in order to recover the time stamp (Yun, column 2, lines 40-41).

6. Claim **12** is rejected under 35 U.S.C. 103(a) as being unpatentable over **Sanderford, Jr. et al (Patent number: 4,799,062)** in view of **Levinson et al**

(Patent number: 5,223,816) and further in view of **Bishop et al (Patent number: 6,377,782).**

Consider **Claim 12,** Sanderford, Jr. et al as modified by Levinson et al show the unit of claim 7, but fail to specifically show that the unit further comprising an I/Q demodulator coupled to the frequency discriminator.
However, in related art, Bishop et al, show that the unit further comprising an I/Q demodulator coupled to the frequency discriminator (column 16, lines 40-67).
Therefore, it would have been obvious to a person skilled in the art at the time the invention was made to incorporate the teaching of Bishop et al into the teaching of Sanderford, Jr. et al as modified by Levinson et al in order to convert the signals to digital form (Bishop et al, column 16, lines 50-55).

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory

action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael Faragalla whose telephone number is (571) 270-1107. The examiner can normally be reached on Mon-Fri 7:30 am-5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nick Corsaro can be reached on (571) 272-7876. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Michael Faragalla

08/07/2007

JOSEPH FEILD
SUPERVISORY PATENT EXAMINER